MOSES PRASAD VARGHESE

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EDUCATION

Master of Science in Mechanical Engineering (Data Science) | University of Washington Seattle, WA | June 2023

- Relevant coursework: Software Development for Data Scientists, Data Science and Materials Informatics, Natural Language Processing, Database Management Systems, Deep Learning, Computer Vision, Applied Parallel Computing, Control Systems
- GPA: 3.85/4.00

Bachelor of Technology in Mechanical Engineering | National Institute of Technology Rourkela, India | June 2018

- Relevant coursework: Data Structures and Algorithms, C and C++ programming, Advanced Mechatronics, Computer Graphics, Basic Electronics and Electrical Engineering, Electrical Machines
- CGPA: 8.33/10.00 and graduated with Honours

12th Grade | United Indian School, Kuwait | June 2014

- Aggregate of 90.2%
- Scored 97% in Computer Science
- Bronze Medalist of 2013 - 2014 academic year

PUBLICATION

Anwesa Mohanty, **Moses Prasad Varghese**, Rabindra Kumar Behera, "Coupled nonlinear behavior of beam with a moving mass", Applied Acoustics, Volume 156, 2019, pp. 367–377

SKILLS

- Programming: Python, C/C++, SQL/NoSQL, MATLAB, C#
- Tools: Linux, Git, Docker, Kubernetes, Tableau, PySpark, Databricks, Postman, Azure, Apache Spark
- Frameworks: PyTorch, TensorFlow, FastAPI, NLTK, LangChain, Vertex AI, OpenCV, Keras, Scikit-learn, Streamlit, NumPy, Pandas, Seaborn, Matplotlib, CUDA, Numba, Open Source

PROJECTS

Machine Learning Intern | Chubb Insurance, Jersey City, New Jersey (remote) | September 2022 - March 2023

- Performed data extraction on unstructured documents classified using the Azure Form Recognizer
- Developed post-processing algorithms with regular expressions to refine information extraction
- Trained customized AI models using Azure Doc AI, achieving 80% accuracy in entity detection
- Achieved 3/30 rank on an automated data capture tool project with Azure AI Entity Extraction and Kubernetes
- Analyzed PyOD research paper and developed an outlier detection predictive algorithm for real-time anomaly document classifier by probabilistic unsupervised learning

Database Development Lead | Institute for Health Metrics and Evaluation, Seattle, WA | June 2022 - August 2022

- Led a team in database design and management for a high-priority project
- Developed an Entity Relationship (ER) System to optimize the existing database structure and efficiency
- Identified architectural issues based on the ERD to improve database performance with faster read/write

Deep Learning Project | University of Washington Seattle, WA | April 2022 - June 2022

- Conducted research study on approximation, optimization, generalization theory, deep reinforcement learning, neural network architectures, transformers, and unsupervised learning techniques
- Analyzed "Long-Term Visual Dynamics with Region Proposal Interaction Networks" to advance understanding of visual dynamics and interaction models
- Investigated representation learning and physical reasoning in images using Convolution Interaction Networks

Computer Vision Project | University of Washington Seattle, WA | April 2022 - June 2022
- Conducted research study on image transformations, resizing, filtering, convolutional operations, interest operators, object detection and motion/optical flow
- Analyzed the paper on "Global Association Network for Lane Detection" using ResNet architecture
- Developed a ResNeXt model with self-attention, replacing ResNet, achieving a 94% F1 score

Applied Parallel Computing Project | University of Washington Seattle, WA | April 2022 - June 2022
- Conducted research study on GPU resource utilization and parallelization using CUDA programming
- Developed an algorithm for Stereoscopic Depth Perception with 3 billion pixel calculations
- Parallelized computation with global memory, 2D grids, and 32 threads per block
- Achieved 85% accuracy and 147x faster performance over sequential algorithms

Natural Language Processing Project | University of Washington Seattle, WA | January 2022 - March 2022
- Conducted research study on language modeling, vector embeddings, semantic and linguistic structure prediction, and sequence-to-sequence models
- Analyzed the paper on aspect-based sentiment analysis (ABSA) using supervised contrastive learning model
- Investigated ABSA performance on new dataset and transformer encoder with BERT achieving 86% accuracy

Data Science and Materials Informatics Project | University of Washington Seattle, WA | Sept 2021 - Dec 2021
- Applied linear and multilinear regression models for material characteristic predictions with 82% accuracy
- Designed elbow and silhouette methods for optimal cluster prediction with 80% accuracy
- Implemented decision trees, SVM, and K-means clustering, to analyze large datasets of material properties
- Developed visualizations with Seaborn, Plotly, Altair and Matplotlib

Student Researcher | National Institute of Technology Rourkela, India | January 2017 - December 2019
- Analyzed nonlinear dynamics of a beam with a moving mass to assess its modal behavior
- Developed a geometric model incorporating nonlinearities and energy conversion
- Utilized Hamilton's principle, Galerkin discretization, and the Method of Multiple Scales for analysis
- Designed a MATLAB ODE solver for numerical analysis and simulation
- Achieved over 90% accuracy between analytical, numerical, and simulation results
- Published research article [https://doi.org/10.1016/j.apacoust.2019.07.024] in Journal: Applied Acoustics

EXPERIENCE

AI Automation Process Optimization Engineer | inerG Software Innovations, India (HQ: Texas, USA) | Aug 2025 – Now
- Developed an automated data pipeline through API integration to process 2,000+ weekly records eliminating 100% manual effort, cutting costs by 90%, and accelerating data delivery by 80% to drive revenue decisions
- Implemented multithreaded API integration using ThreadPoolExecutor and node-aware parallel processing to fetch 10,700+ records, reducing ingestion time from 15 minutes to less than 70 seconds for real-time revenue and performance dashboards

Machine Learning with Material Science Project | University of Washington Seattle, WA | Jan 2023 – Mar 2023
- Developed and contributed to the open-source Python library *Solcore*, optimizing models for analyzing and visualizing data on solar cells and semiconductor materials
- Applied ML algorithms to extract insights and improve predictions of material properties and performance

Database Application Development Project | University of Washington Seattle, WA | Sept 2022 - Dec 2022
- Conducted study on query languages (SQL, Datalog), data models, database tuning and indexing, security, cloud databases (SQL Server on Azure, SQLite), transactions, and parallelism (MapReduce, Spark)
- Developed a command-line database application in Python (pymssql) for user management, scheduling, and inventory with Azure database integration

Software Development for Data Scientist Project | University of Washington Seattle, WA | Sept 2021 - Dec 2021
- Designed a real-time web dashboard using Streamlit in Python to display stock metrics with sentiment analysis
- Collected 1.6M+ data points from media posts focusing on sentiments and stock price data for specific tickers

- Developed a trading algorithm using VADER to generate trading indicators from social media sentiment
- Applied deep reinforcement learning to simulate buy/sell decisions based on trading signals and stock prices
- Achieved an average of 70% accuracy in model decision-making over one year of time series data

ACHIEVEMENTS

- Top 15.45% in Renewable Energy Predictive Maintenance & Optimization, Zelestra Hackathon (May 2025)
- Top 14.21% of 844 candidates in Demand Forecasting in Transportation, RedBus Hackathon (June 2025)
- Top 6.94% of 821 in Machine Learning–Based Blend Property Predictions, Shell AI Hackathon (July 2025)
- Developed 3 end-to-end Agentic AI applications for Agriculture Sector, Capital One Hackathon (August 2025)
- Shortlisted for final review out of 5700+ teams for a hackathon to build (1) Airline Booking-Status Check-Cancellation AI Agent and (2) Threat Intelligence AI Agent (September 2025 - Present)
- Developed a fully functional AI-powered command and control (C2) platform designed to enhance the security and operational integrity of autonomous drone swarms, THALES GenTech Hackathon (October 2025 - Present)